A prospective study of pre-operative predictors of difficult laparoscopic cholecystectomy

The gold standard treatment of choice for gallbladder disease mainly symptomatic cholelithiasis is laparoscopic cholecystectomy (Oymaci et al., 2014). But this treatment is not devoid of complications albeit it is lower in experienced hands which require caution from the surgeon (Jethwani et al., 2013). The present study was aimed to assess the various preoperative predictors (history/ clinical/ imaging) and develop a scoring method for difficult laparoscopic cholecystectomy with a secondary objective of correlating preoperative predictive factors with intraoperative difficulty in lap cholecystectomy. In our study, the method employed was to develop a scoring system to preoperatively ascertain the difficulty in laparoscopic cholecystectomy based on clinical findings, history and sonology. The grades were given as easy (<5), difficult (5-10) and very difficult (11-15).A study of 41 patients to understand the pre-operative predictors of difficult laparoscopic cholecystectomy revealed that a majority of them were above 50 years of age (58.5%, n=24) and most of them were females (63.4%, n=26). Chi-square test for independence between the operation time grading and grading of total score shows a very significant value at $p<0.001$ and a Pearson Chi-Square value of 64.233 with degrees of freedom=4. There is a significant positive correlation between age and total score of the participants ($r=0.417$, $p<0.05$), very high

significant positive correlation between operation time and total score (r=0.896, p<0.001), positive significant relationship between total score and abdominal scar (r=0.590, p<0.001), positive significant relationship between operation time and abdominal scar (r=0.558, p<0.001), positive significant relationship between total score and GB wall thickness (r=0.845, p<0.001), positive significant relationship between operation time and GB wall thickness (r=0.873, p<0.001), positive significant relationship between total score and Pericholecystic collection (r=0.855, p<0.001), positive significant relationship between operation time and Pericholecystic collection (r=0.862, p<0.001), positive significant relationship between total score and history of hospitalisation (r=0.813, p<0.001), and positive significant relationship between operation time and history of hospitalisation (r=0.771, p<0.001),Higher BMI, GB thickness >4mm, previous history of hospitalisation, female gender and pericholecystic collection are associated with difficult and very difficult grading of scores.In this study, only one case (2.45%) was converted into open due to frozen calots and omental adhesions. Two cases did not fall into the correct prediction of outcome from scoring. One of them was a 65 year old male with a BMI of 23.80 with supraumbilical incision. It was predicted as easy with a score of 4 but the duration extended to 90 minutes making it difficult. Another case was a 66 year old male with a BMI of 23.44 with infraumbilical incision. It was predicted as easy with a score of 3 but the

duration extended to 70 minutes making it difficult. This is attributed to the presence of adhesions inside the abdominal cavity.

The current scoring system used in this study is very effective in predicting the difficulty of the laparoscopic cholecystectomy with very high sensitivity. The smaller sample size limits the ability to accurately predict and discuss the other determinants of difficulty in laparoscopic cholecystectomy. Future research should focus on finding out the exact relationship between the individual variables and the difficulty of the surgical procedure.

Key words: Laparoscopic Cholecystectomy, Quantitative study, Grading, India, Predictors